

What Is Claimed Is:

1. An exposure apparatus that exposes a substrate via a projection optical system, the apparatus comprising:

5 a substrate stage that can move with the substrate mounted; and

 a measurement section that has a plate on which a liquid is supplied and performs measurement related to the exposure via the projection optical system and the liquid, wherein

10 the apparatus is configured so that at least a part including the plate that constitutes the measurement section can be exchanged.

2. The exposure apparatus of Claim 1 wherein

15 the measurement section consists of a measurement unit that has at least a part of the unit arranged on a part of the substrate stage, and some of the components that include at least the plate that constitutes the measurement section unit is attached freely detachable to the substrate stage.

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3. The exposure apparatus of Claim 1 wherein the measurement section comprises

 a measurement stage main body that can move within a two-dimensional plane independently from the substrate stage, and

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 a measurement table main body that holds the plate.

4. The exposure apparatus of Claim 3 wherein

the plate is held detachable from the measurement table main body.

5 5. The exposure apparatus of Claim 4, the apparatus further comprising:

 a leveling table attached on the measurement stage main body, wherein

 the measurement table main body is supported finely movable on the leveling table.

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 6. The exposure apparatus of Claim 5 wherein

 the leveling table can be driven in directions of six degrees of freedom, and

 the measurement table main body can be driven in
15 directions of three degrees of freedom within a horizontal plane.

 7. The exposure apparatus of Claim 3, the apparatus further comprising:

20 a self-weight compensation mechanism that compensates weight of the measurement table main body.

 8. The exposure apparatus of Claim 1 wherein

 at least one fiducial mark and at least one pattern used
25 for measurement is formed on the plate, and

 the measurement section has a light-receiving system that receives exposure light irradiated on the plate via the projection optical system, via the pattern used for measurement.

9. The exposure apparatus of Claim 8 wherein
a plurality of types of patterns used for measurement
are formed on the plate, and

5 the measurement section has a plurality of the
light-receiving systems that correspond to the pattern used
for measurement.

10 10. The exposure apparatus of Claim 9 wherein
the plurality of types of patterns used for measurement
include at least one of an aperture pattern used for aerial
image measurement, a pinhole aperture pattern used for
irregular illumination measurement, an aperture pattern used
for illuminance measurement, and an aperture pattern used for
15 wavefront aberration measurement.

11. The exposure apparatus of Claim 1, the apparatus
further comprising:

20 at least one substrate stage different from the
substrate stage on which the substrate is mounted.

12. The exposure apparatus of Claim 1, the apparatus
further comprising:

25 a control unit that executes measurement by the
measurement section according to an exchange timing of a
substrate on the substrate stage.

13. The exposure apparatus of Claim 12 wherein
the control unit executes measurement of specific types,

dividing the measurement into a plurality of times according to the exchange timing of the substrate.

14. An exposure apparatus that exposes a substrate via
5 a projection optical system, the apparatus comprising:

a substrate stage that can move with the substrate mounted; and

a measurement section that has a plate on which mirror-polishing is applied on at least one edge surface, and
10 performs measurement related to the exposure via the projection optical system, wherein

the apparatus is configured so that at least a part including the plate that constitutes the measurement section can be exchanged.

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15. The exposure apparatus of Claim 14 wherein

the measurement section consists of a measurement unit that has at least a part of the unit arranged on a part of the substrate stage, and some of the components that include
20 at least the plate that constitutes the measurement section unit is attached freely detachable to the substrate stage.

16. The exposure apparatus of Claim 14 wherein the measurement section comprises

25 a measurement stage main body that can move within a two-dimensional plane independently from the substrate stage, and

a measurement table main body that holds the plate.

17. The exposure apparatus of Claim 16 wherein the plate is held detachable from the measurement table main body.

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18. The exposure apparatus of Claim 17, the apparatus further comprising:

a leveling table attached on the measurement stage main body, wherein

10 the measurement table main body is supported finely movable on the leveling table.

19. The exposure apparatus of Claim 18 wherein the leveling table can be driven in directions of six
15 degrees of freedom, and

the measurement table main body can be driven in directions of three degrees of freedom within a horizontal plane.

20. The exposure apparatus of Claim 17, the apparatus further comprising:

a self-weight compensation mechanism that compensates weight of the measurement table main body.

25 21. The exposure apparatus of Claim 14 wherein at least one fiducial mark and at least one pattern used for measurement is formed on the plate, and

the measurement section has a light-receiving system that receives exposure light irradiated on the plate via the

projection optical system, via the pattern used for measurement.

22. The exposure apparatus of Claim 21 wherein
5 a plurality of types of patterns used for measurement
are formed on the plate, and
the measurement section has a plurality of the
light-receiving systems that correspond to the pattern used
for measurement.

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23. The exposure apparatus of Claim 22 wherein
the plurality of types of patterns used for measurement
include at least one of an aperture pattern used for aerial
image measurement, a pinhole aperture pattern used for
15 irregular illumination measurement, an aperture pattern used
for illuminance measurement, and an aperture pattern used for
wavefront aberration measurement.

24. The exposure apparatus of Claim 14, the apparatus
20 further comprising:

at least one substrate stage different from the
substrate stage on which the substrate is mounted.

25. The exposure apparatus of Claim 14, the apparatus
25 further comprising:

a control unit that executes measurement by the
measurement section according to an exchange timing of a
substrate on the substrate stage.

26. The exposure apparatus of Claim 25 wherein
the control unit executes measurement of specific types,
dividing the measurement into a plurality of times according
to the exchange timing of the substrate.

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27. An exposure apparatus that exposes a substrate via
a projection optical system, the apparatus comprising:

a substrate stage that can move with the substrate
mounted;

10 a measurement section that has a plate that can be
exchanged, and performs measurement related to the exposure
via the projection optical system; and

a detection unit that detects an exchange timing of the
plate.

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28. The exposure apparatus of Claim 27 wherein
at least one fiducial mark and at least one pattern used
for measurement is formed on the plate, and

20 the measurement section has a light-receiving system
that receives exposure light irradiated on the plate via the
projection optical system, via the pattern used for
measurement.

29. The exposure apparatus of Claim 28 wherein
25 a plurality of types of patterns used for measurement
are formed on the plate, and

the measurement section has a plurality of the
light-receiving systems that correspond to the pattern used
for measurement.

30. The exposure apparatus of Claim 29 wherein
the plurality of types of patterns used for measurement
include at least one of an aperture pattern used for aerial
5 image measurement, a pinhole aperture pattern used for
irregular illumination measurement, an aperture pattern used
for illuminance measurement, and an aperture pattern used for
wavefront aberration measurement.

10 31. The exposure apparatus of Claim 27, the apparatus
further comprising:

at least one substrate stage different from the
substrate stage on which the substrate is mounted.

15 32. The exposure apparatus of Claim 27, the apparatus
further comprising:

a control unit that executes measurement by the
measurement section according to an exchange timing of a
substrate on the substrate stage.

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33. The exposure apparatus of Claim 32 wherein
the control unit executes measurement of specific types,
dividing the measurement into a plurality of times according
to the exchange timing of the substrate.

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34. A device manufacturing method that includes a
lithography process in which a device pattern is transferred
onto a substrate using the exposure apparatus according to
any one of Claims 1 to 33.

35. An exposure method in which a substrate is exposed, the method comprising:

an exchange process in which of a measurement section
5 that performs measurement related to the exposure via a plate on which a liquid is supplied, at least a part including the plate is exchanged; and

an exposure process in which measurement related to the exposure is performed using the measurement section after the
10 exchange, and the substrate is exposed reflecting the measurement results.

36. An exposure method in which a substrate is exposed, the method comprising:

15 an exchange process in which of a measurement section that performs measurement related to the exposure via a plate that has at least one edge surface mirror-polished, at least a part including the plate is exchanged;

a measurement process in which a position of the plate
20 after the exchange is measured via the edge surface, and the measurement is performed using the measurement section; and

an exposure process in which the measurement results are reflected and the substrate is exposed.

25 37. An exposure method in which a substrate is exposed, the method comprising:

a measurement process in which measurement is performed using a measurement section that performs measurement related to the exposure via a plate;

an exchange process in which an exchange timing of the plate is detected and the plate is exchanged; and

an exposure process in which the substrate is exposed with the measurement results reflected.